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GREEN HOUSE

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1. PROJECT DESCRIPTION

The project is part of a masterplan that integrates the neighborhood of Budafok, located on the banks of the Danube River, in the southwest region of the Buda area of the city of Budapest.

The neighborhood of Budafok, before 1950, was a municipality of its own and was historically famous for being a wine region, until today there are remains of the old cellars in the basement of the land, which served to store the old wine production. Today, the Törley champagne factory, a wine-related trade, meeting groups and festivals for wine fans is located in the neighborhood.

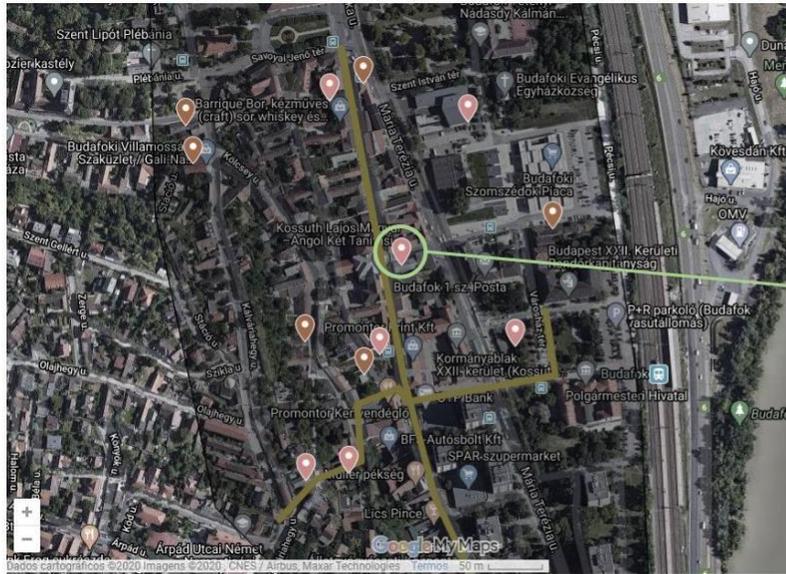
The region has more distinct topographic characteristics, with steep slopes and slopes and urban fabric close to the coastal area of the Danube, despite that, paradoxically, physically and socially it is distant from the river, since there are two train and highway lines that separate the city to the watercourse.

The central territory studied is currently showing intense traffic of cars and people, because in addition to being the end of the

Tram 47 line, there is also the meeting of squares that share space for public administrations, parking lots, monuments. We can see a majority of commercial and residential areas, with architectural characteristics from different times. Due to deteriorating processes such as intense traffic, some projects were proposed to improve the local quality of life.

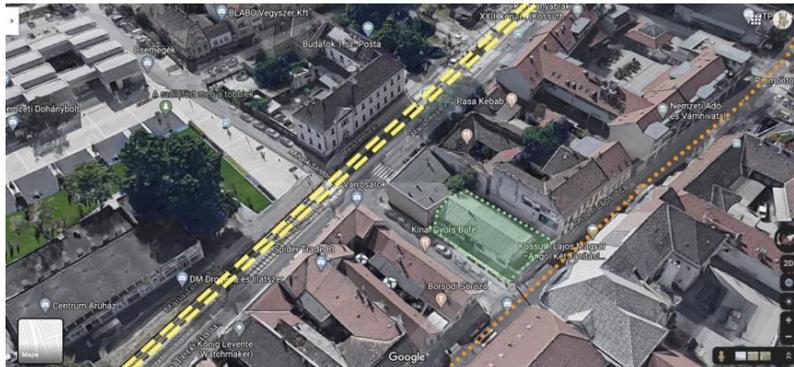
The chosen site is located in the central territory of Budafok, where most food and commercial establishments are found, with an average height of approximately two floors, close to the newly built public market. It is in a corner situation, between three very busy streets today, where two of them are planned to be replaced for pedestrian use.

In its surroundings are two buildings with height for approximately four floors, one of which is for educational use. There is no change of visible level in the land and it will be necessary to demolish an existing building for the application of the proposed project and its longitudinal area is facing north.



PLOT #8

- Central location
- Corner
- Development of pedestrian street
- Accessibility
- Proximity to School
- Proximity to comercial (food) establishments.



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Map 1 and 2- Plot Location

The site chosen was the indicated above, it has 663 m² and it is on a corner position, the neighboring buildings have different heights, one with 2 floors, and other with 1, with a flat surface

1.1. ARCHITECTURAL CONCEPT

The project includes a masterplan, with specific interventions throughout the territory, being located in a very busy region, due to the proximity to important points of public and commercial transport, close mainly to buildings that allocate gastronomic functions, markets, bakeries and cafes. This situation allowed the development of the building concept, being a mixed-use building, housing a bakery and flower shop on its ground floor, and an apartment for a family on its first floor.

My first impression of Budafok was one of contradictions, a region that is close to the banks of the river, but at the same time it does not have a good relationship with it due to the large roads that generate an access barrier.

Another situation would be its topography that in its points higher ceilings allow the view of the island of Csepel, however the

soil, concerning to the groundwater level, it is located approximately at 2,0 m of depth.

obtained view is of an extremely industrial region of the island, or the case of being a village with several single-family houses but at the same time there is an unexpected break with some taller multi-family buildings that do not integrate the old urban fabric more pleasantly.



Figure 2- Barriers to the Danube.



Figure 1-View of the city with the multifamily buildings, contrast of the unifamiliar houses.



Figure 3-View of the city and Csepel Island

Seeking to bring a contradiction to this busy region, urban integration was thought of as a space that brings peace and warmth, with more interaction with green areas. Then the concept of a greenhouse was integrated into the mixed function, allowing an architectural unity of ideas.

On the right it is the first pictures for the definition of the feelings attached to the first idea, with this was possible to create an idea board with the main materiality, forms and approach of architectural elements and practical use with the real.

With the idea board already figured out and the area and urban analysis was possible to create a diagram of the general and main concept for the development of the project.

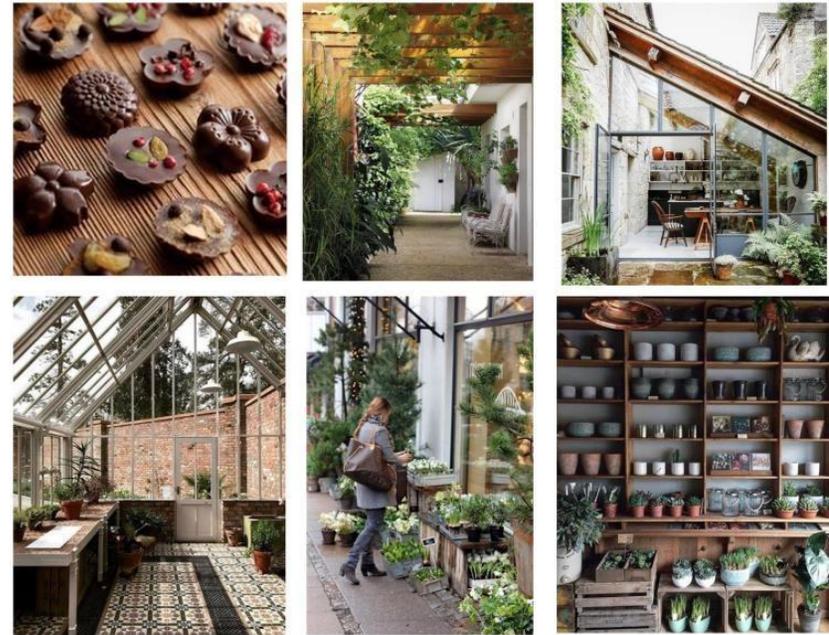


Figure 4-Idea Board



Figure 5- Concept Diagram

REFERENCE PROJECTS

As inspiration for the creation of the project, some buildings with similar or aesthetic functions that could be reached in the design were analyzed.

The Green House / Sigurd Larsen / 2017 – Denmark

This house has well divided spaces with the inclusion of wood and glass, making it a comfortable space with natural lighting.



Figure 6- Glass house area

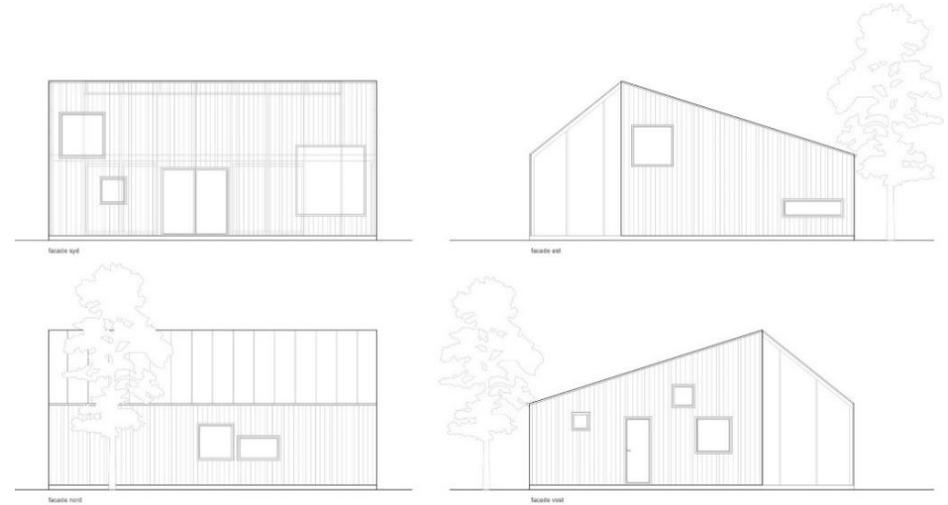


Figure 7- Facades

HOUSE TYPE ONE 82 m² + 32 m² Winther Garden

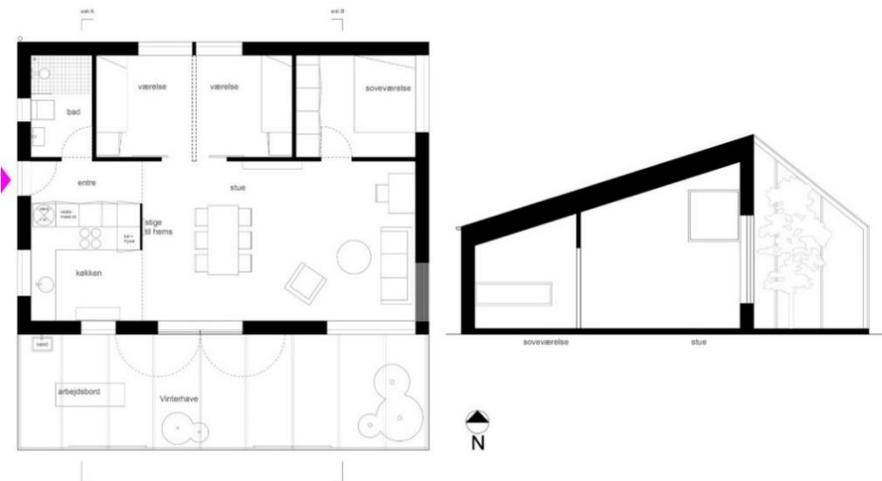


Figure 8- Plan and Section

**The Green House / architectenbureau cepezed / 2018 –
Netherlands**

This project is a commercial environment and has its own food production. The environment is well lit due to the curtain walls which was also designed to have a second skin, it was also used with prefabricated wooden structures and steel frame.



Figure 9 and 10 - Interior



Figure 11 e 12 – Exterior of the building

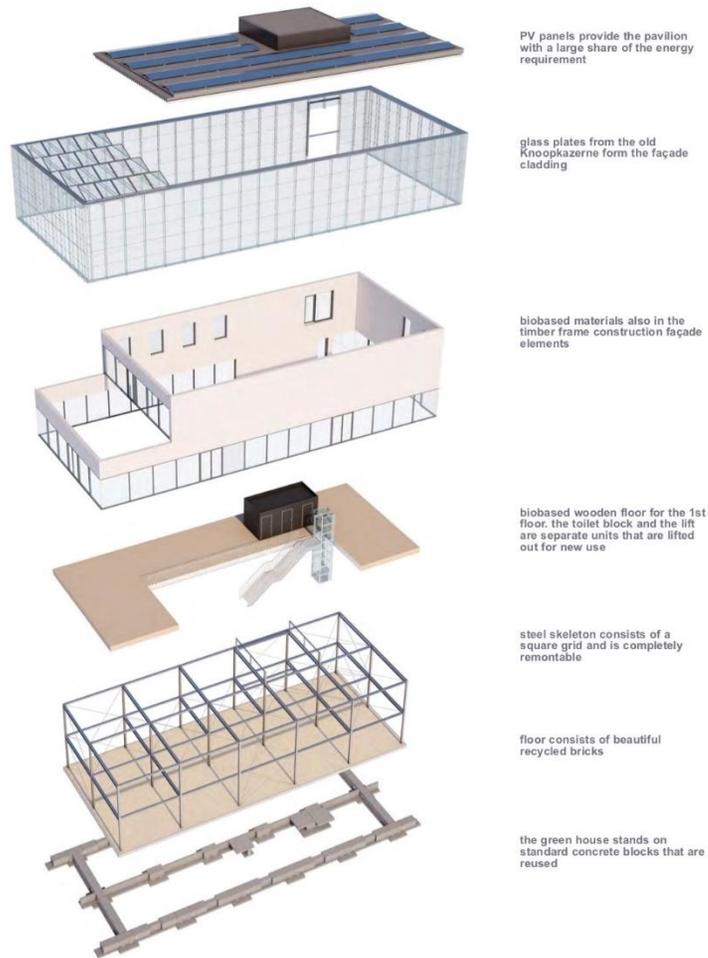


Figure 13 - Construction isometry

1015-p The Green House
fragments facade
1:50

- 1 reused greenhouse roof with skylights, mounted on galvanized lattice girders
- 2 galvanized steel roofing sheets, perforated and filled with acoustic insulation and filled with reused smoke glass panels from the former knoopkazeme mounted on galvanized lattice girders
- 3 prefabricated wooden floor elements covered with reused sidewalk tiles against solid-borne noise and a dry floor heating system
- 4 reused sidewalk tiles in greenhouse
- 5 aluminum curtain wall facade, without PUR or sealant joints
- 6 reused paving bricks on sand with floor heating and cooling system, compression resistant insulation
- 7 foundation of stelcon slabs and prefabricated concrete legoblocks

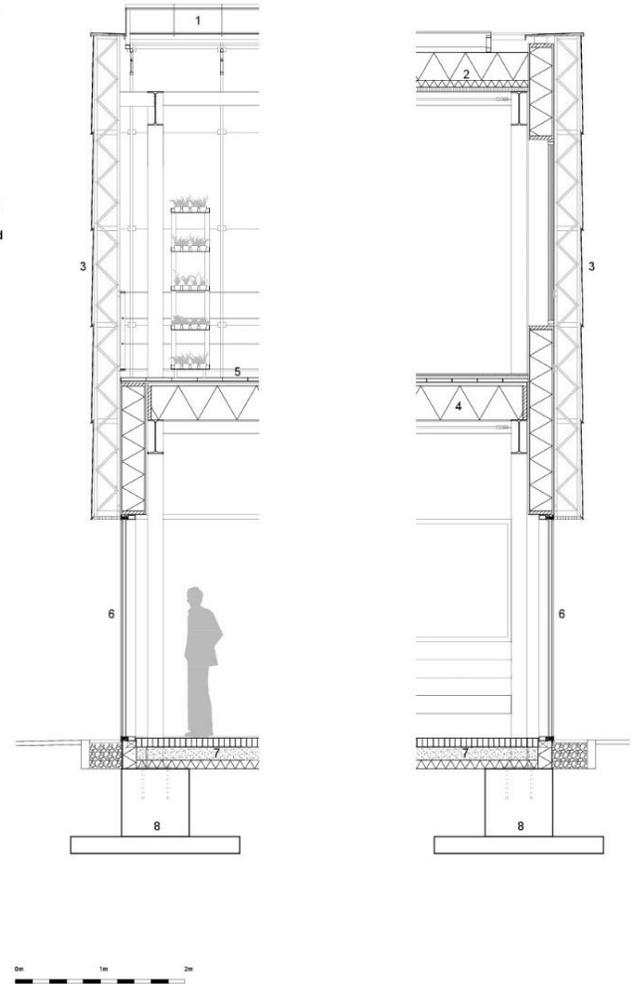


Figure 14 – Section of the façade

**micasa vol.C / Studio MK27 - Marcio Kogan + Marcio Tanaka/ 2018
– São Paulo/ Brazil**

A furniture store that was designed to have several uses and be super flexible that can be easily transformed into a store, exhibition space and temporary residence for guest artists, with a trailer that can be installed inside. For the construction of a light pavilion, a structural wooden system was adopted, part of the recent investigations of studio mk27, and suitable for a clean and fast work.



Figure 15, 16 and 17 – View of the exterior

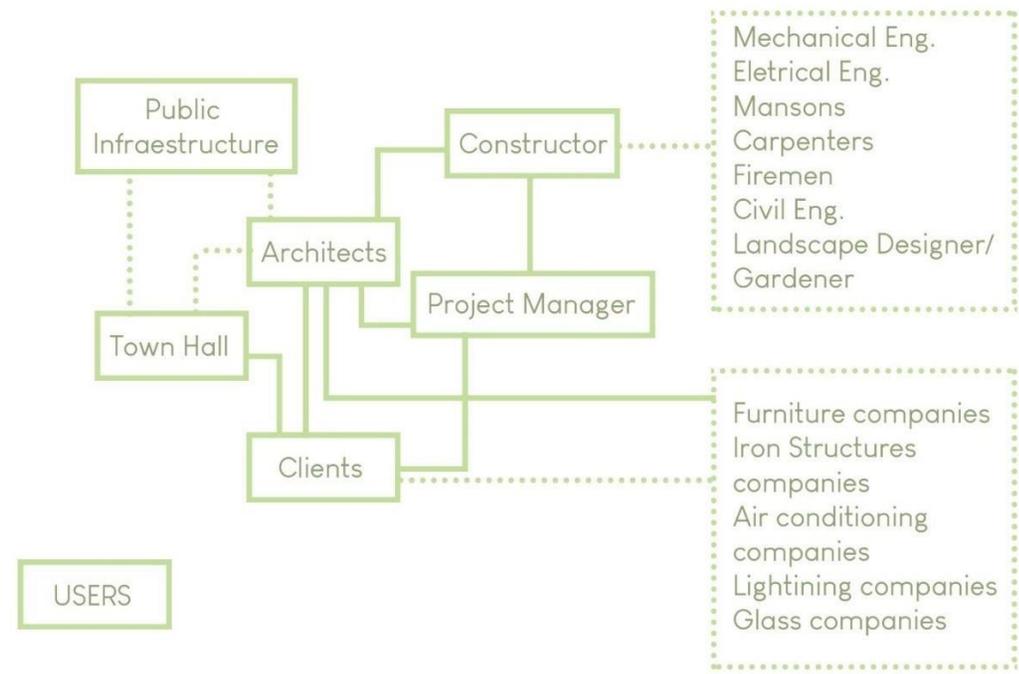
2. INVESTMENT PLAN

2.1. FINANCIAL BACKGROUND AND PARTICIPANTS

This project will be part of a bigger masterplan, of public interest, being a building of residential and commercial interest, the investment and the building will be provided by the a private owner, will thus be developed the building preliminarily, with the performances of the following main actors:

- Client
 - provide financial background, liquidity of the project
 - dispose with the construction site
 - procure the rights to build (attain building consent)
 - establish contract with the architect, consultant, contractor, etc.
 - share rights and risks
 - attain permission of use
- Architect
 - help the client in professional way to attain building permit
- prepare documentations according the national/international standards and legal prescriptions
- coordinate the work of the co-operative designers and professionals
- Cooperative designers and professionals
 - prepare documentations according the national/international standards and legal prescriptions
 - continuous co-operation and communication with the designer architect
- Project Manager or PM team
 - depend on their contract – coordination
- Authorities
 - provide building permit

- provide permission of use
- give consent for the plans, for the technical solutions, etc., according to the legal prescriptions
- Public utilities, public services
 - give a consent for the plans (capacity, standards, etc.)
 - verify the finished work
- Bank (financing institute)
 - consider the requests for credit
 - grant credit by schedule for the project
 - control the use of money



2.2. ARCHITECTURAL PROGRAM

Commercial Area (Ground Floor)		m ²
Lounge and Reception		249
Bakery		44
Storage		3,56
WC public		9,8
WC employee		2,64
Rest room		7,69
Closed room		4,65
Reception room		6,45
Garbage room		6,78
Privative Area (Ground Floor)		m ²
Parking and Stairs		43,6
Commercial Area (First Floor)		m ²
Green House		88
Privative Area (First Floor)		m ²
Stairs		6
Office		10
Living and Dining room/ kitchen		91,6
Circulation		12,3
Suit master		25,8
WC Suit		5,22
Closet Suit		6,23
WC		6,22

Storage	5,73
Room 1	18
Room 2	18,8
Closet Room 2	3
Total	675

2.3. SPECIAL REQUIREMENTS

The development of the building was based on the following regulations:

REGULATION LK1

- layout typology: adjacent to neighbor with a closed facade on main street front
- minimal plot width: 14m
- max built area 35% (ground floor)
- min green area: 35%
- max built area under ground: 50%

- gross area of all floors: 70%
- Max building height: 7,5m

As a project that is part of an urban master plan, the numbers are not strictly considered to promote an urban use for the quality of two pedestrians and users. Besides that, for the bakery use, is needed to provide staff room, staff toilet, guest toilets, kitchen, and storage. And for the Fire protection requirements it is needed to separate the floors above each other with at least 1,30 m vertical wall, that way the fire cannot spread from one to another story.

3. BRIEF TECHNICAL DESCRIPTION

To construct a project, the condition of the site, including subsurface and surface condition, must be investigated.

To determine the present situation for the installation of underground services is important to make analysis of the soil. To specify suitable foundation is necessary to follow recommendation of geotechnical report, this step will anticipate the level of ground water, grading amount needed for proper drainage to push water away from the structure, whether the site is difficult to excavate or not and data for frost penetration depth.

- Geotechnical Report related to Site Soil Properties

Geotechnical report creates communication between the site condition and design and construction recommendation, It is produced based on a series of tests on soil and it is important to have this report to understand properties and condition that will be necessary to produce the right calculations for the design of the building.

- Construction Site Clearing and Excavation

Clearing and excavation is part of preparing the site for the construction, trees, and all sorts of vegetation on the site are removed at site clearing phase. After the layout of the structure is set, the excavation work begins, and the soil is removed to a required depth in which the foundation of the structure is placed.

- Public utility construction

Construction of public utility necessary previously for the construction site areas, mainly for the working units and working areas.

- Compaction of Construction Project Site

The soil below the foundation in the site construction must be compacted to the degree necessary for maximum dry density. Compaction of load-bearing soil layers is essential as it decreases settlement and therefore prevents unwanted incidents.

- Installation of the crane

For the installation of the crane is necessary to the site be covered as far possible and the cranes must have hoisting capacity. For the construction, it is needed to cover storage yard, loading and unloading and part processing area. For hoisting capacity of the tower crane is related to distance, layout and position of machine should consider the lifting capacity of corresponding construction components position.

- Construction of the Foundation

For this building 1,30-meter reinforced concrete strip foundations made on site has been chosen. For its construction we must transport concrete by concrete mixer to the site and by the help of tower crane it will be poured.

- Reinforced concrete walls

Construction of concrete walls is a very important step in building construction. It is constructed as a load bearing structure to transfers loads from floor to the wall below or to the foundation, in addition to divide spaces in multi- story buildings. Therefore, it greatly

controls the safety of the building.

- Dry walls for the bathroom:

For the construction of the dry walls on the bathroom areas is necessary to keep a safe solution to protect from the water usage, as it is a wet area.

- Construction of Concrete Floor Slabs

Concrete floor slab construction process includes erection of formwork, placement of reinforcement, pouring, compacting, and finishing concrete and lastly removal of formwork and curing of concrete slab.

- Installation of CLT panels/ pillars, walls, slabs, and beams

Installation of prefabricated CLT panels for the areas where it is indicated on the project, it is necessary to have an installation of steel joints for the load bearing connections with the R.C. elements for each necessary CLT piece of meeting.

- The Flooring construction

The general floor slab is a floating floor; it was chosen because of the sound insulation capacity.

- Insulation

Exterior walls - must have an insulation layer not smaller than 15mm.

Roofing - in the building there is a walkable roof terrace only for maintenance purposes

- Construction of the flat roof

It is needed to make an leveling for the water drainage, install all the elements as gullies and gutters, meanwhile constructing all the layers of waterproofing, anti-vapor barrier, drainage layers and thermal insulation, with the last element as tiling.

- Construction of the stairs

The stairs of the building are monolithic constructions supported on 200mm floor slabs in

each floor. For the stairs inside each apartment, will be used stairs prefabricated in steel structures.

- Openings and Building Services.

Placement of the doors and windows is required after all structural and exterior works are finished and before the final interior are done. Ventilation is provided in a natural and artificial way through the building, with ventilation units on each apartment installed before the installation of the gypsum boards, on the ceiling. Natural ventilation is provided by the openings. Heating systems are placed in all building, technical room is located on the ground level.

- Façade construction

For this step, it will be necessary to install all the ventilated façade and curtain walls detailed on the project, for a proper installation is required to look into the manufacturer's manuals, and all the painting on the necessary areas.

- Mechanical works

to be reevaluated .

On the last steps for the construction it is necessary to install all the mechanical elements as ventilation, heating systems, sustainable energy machines and equipment's and all the electrical wiring and sanitary wares.

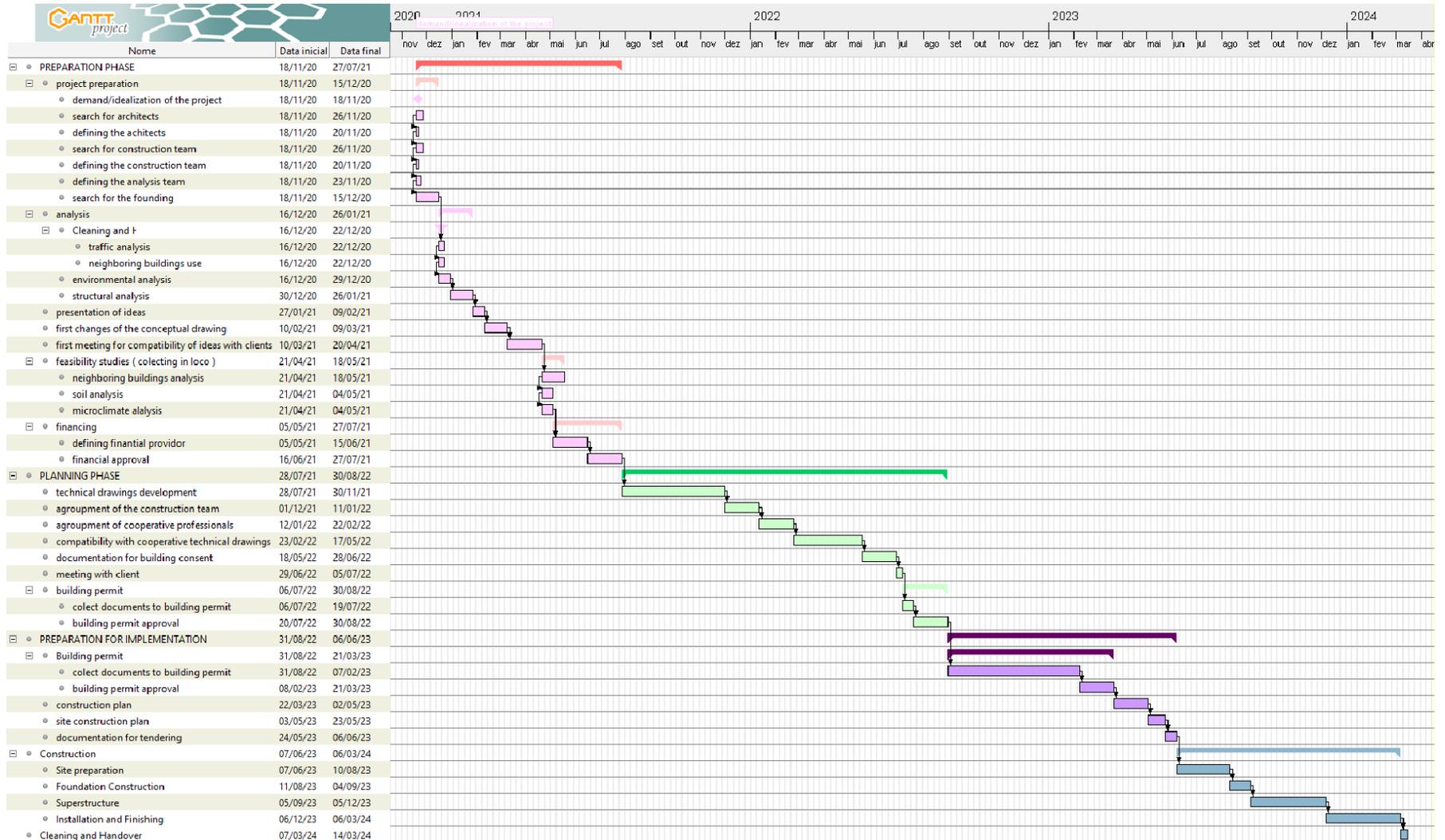
- Lightning

Interior lightning is very important for the apartment and commercial areas of the building, the big openings designed is a plus for the sustainability of the building. External lightning will allow a feeling of security for the mobility on the nighttime. After all the electrical installation, the lighting placement will be the last on the constructional process.

- Cleaning and Final works

The final works consists from waste disposal and finalizing all the details that are missing or needs

4. TIME SCHEDULE OF THE CONSTRUCTION PROJECT



5. SIMPLE COST ESTIMATION

COST GROUPS		ESTIMATED PERCENT	ESTIMATED COST
100	Plot	4%	HUF 70.000.000,00
200	Infrastructure	5%	HUF 12.853.251,00
300	Building construction – > 60%	100%	HUF 263.123.820,00
400	Construction of building installations and electrical -> 40%		
500	Outdoor constructions	1,1%	HUF 4.500.000,00
600	Installations and artwork	5%	HUF 18.878.738,60
700	Aditional expenses	10%	HUF 33.156.502,00
TOTAL			HUF 396.453.512,00

300	Building construction	100%	HUF 176.355.800,00
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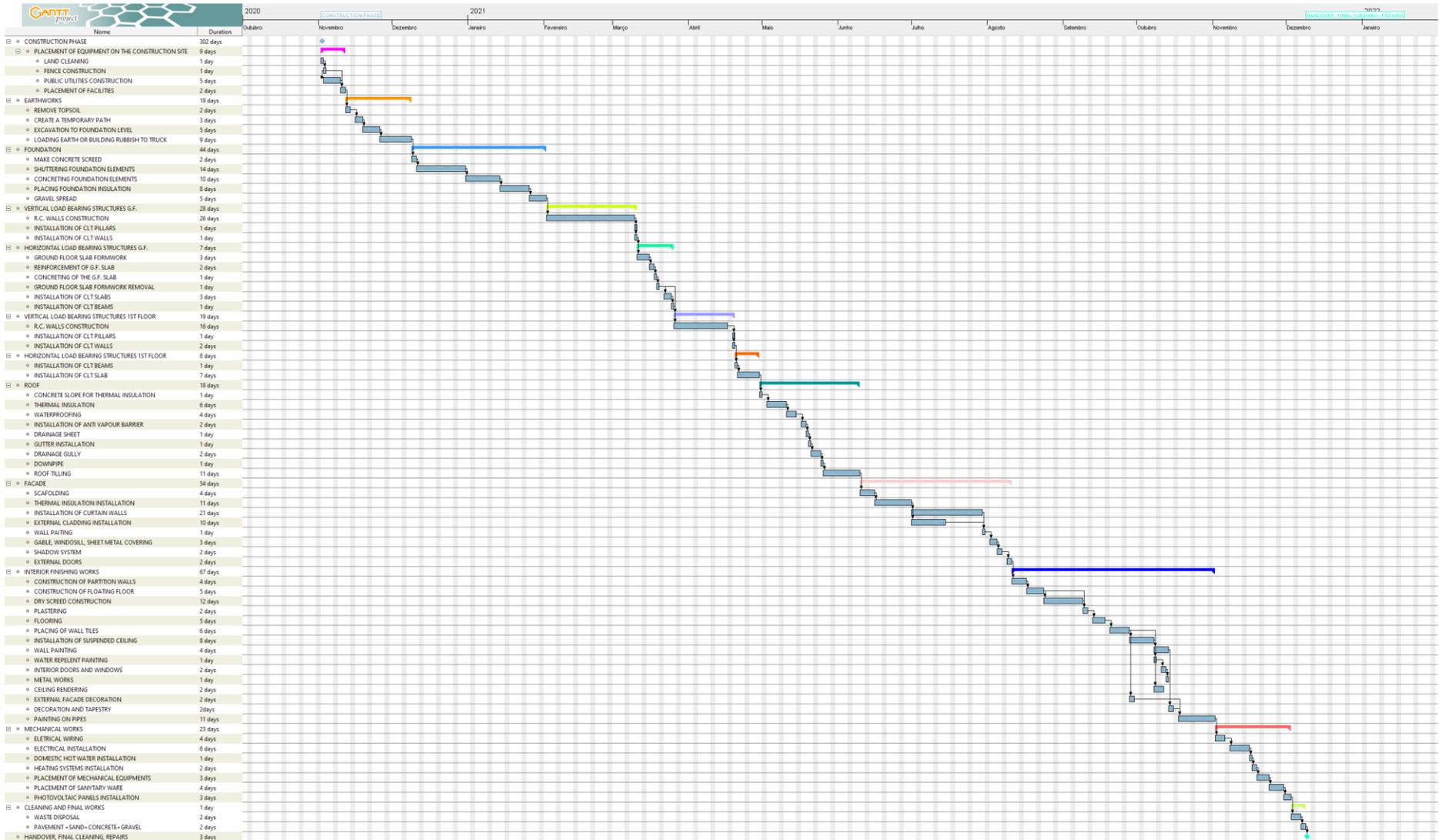
400	Construction of building installations and electrical		HUF 86.768.020,00
TOTAL			HUF 263.123.820,00

Cost groups		Estimated percent	Estimated cost
310	Earthwork	1%	HUF 3.527.116,00
320	Foundation	7%	HUF 17.635.580,00
330	External walls	17%	HUF 44.088.950,00
340	Interior walls	6%	HUF 17.635.580,00
350	Floors (slabs)	10%	HUF 35.271.160,00
360	Roof	10%	HUF 35.271.160,00
370	Built-in appliances	7%	HUF 17.635.580,00
380	Others	2%	HUF 5.290.674,00

Cost groups		Estimated percent	Estimated cost
410	Water, sewage, gas	5%	HUF 13.015.203,00
420	Heating	20%	HUF 65.780.955,00
430	Ventilation and AC	10%	HUF 26.030.406,00
440+450	Electricity, Telecommunication and IT	5%	HUF 26.030.406,00
460	Transportation equipment (elevator)	0%	HUF -

TOTAL	100%	HUF 263.123.820,00
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6. DETAILED TIME SCHEDULE



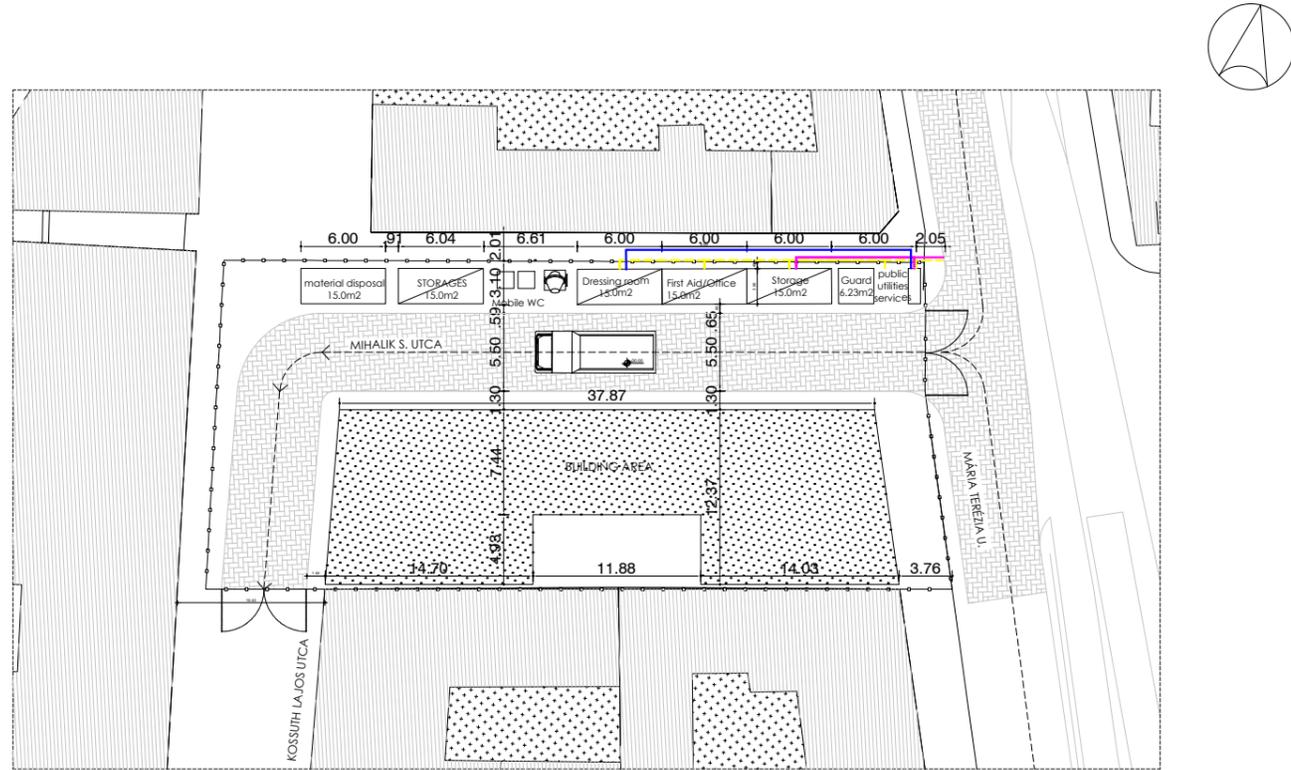
7. TABLE OF COST ESTIMATION

ACTIVITY LIST	QUANTITY	BUILDING NORMA	TIME (HOURS)	POWER SOURCE (WORKERS)	TIME (DAYS)	UNIT NET CONSTRUCTION COSTS	COST
Placement of equipments on construction site					9		812.950 Ft
Fence construction	150 m	0,15 h/m	23 h	4	1	3000 Ft/m ²	450.000 Ft
Placement of facilities					2		
Public utility construction					5		
Land cleaning	427 m ²	0,30 h/m ²	13 h	4	1	850 Ft/m ²	362.950 Ft
Earthworks					19		2.689.600 Ft
Removing topsoil (10cm)	426 m ²	0,12 h/m ²	51 h	4	2	3000 Ft/m ²	1278780
Excavation to foundation level	307 m ³	0,46 h/m ³	141 h	4 Your text here 1	5	2100 Ft/m ³	644.070 Ft
Loading earth or building rubbish to truck	307 m ³	0,92 h/m ³	282 h	4	9	2500 Ft/m ³	766.750 Ft
Create a temporary path	549 m ²	1,50 h/ 10m ²	82 h	4	3		
Foundation					44		40.844.655 Ft
Shuttering foundation elements	523 m ²	0,80 h/m ²	418 h	4	14	150 Ft/m ² /nap	1.097.355 Ft
Concreting foundation elements	307 m ³	1,00 h/m ³	307 h	4	10	50000 Ft/m ³	15.335.000 Ft
Formwork removal of foundation elements	523 m ²	0,27 h/m ³	139 h	4	5		
Placing foundation insulation	523 m ²	0,47 h/m ²	246 h	4	8	5000 Ft/m ³	2.615.000 Ft
Gravel spread	64 m ³	2,26 h/m ³	144 h	4	5	7000 Ft/m ³	447.300 Ft
Make concrete screed	427 m ²	0,14 h/m ²	60 h	4	2	50000 Ft/m ³	21.350.000 Ft
Vertical load-bearing structures G.F. (phases)			836 h		28		58.000.000 Ft
RC walls	120 m ³	6,78 h/m ³	814 h	4	26	120000 Ft/m ²	48.000.000 Ft
Pillars							
instalation of CLT Pilars	8 m ²	1,00 h/m ³	8 h	4	1	200000 Ft/m ³	5.333.333 Ft
instalation of CLT walls	7 m ³	2,00 h/m ³	14 h	4	1	200000 Ft/m ³	4.666.667 Ft
Horizontal load-bearing structures G.F. (Phases)			268 h		7		2.326.450 Ft
Slab construction					7		2.254.000 Ft
Ground floor slab formwork	161 m ²	0,84 h/m ²	135 h	6	3	150 Ft/m ² /nap	72.450 Ft
Reinforcement of ground floor slab	0,81 t	63,90 h/t	51 h	6	2	300000 Ft/t	241.500 Ft
Concreting of the ground floor slab	40 m ³	0,90 h/m ³	36 h	6	1	50000 Ft/m ³	2.012.500 Ft
Ground floor slab formwork removal	161 m ²	0,28 h/m ²	45 h	6	1		
Instalation of CLT slabs	62 m ³	2,00 h/m ³	123 h	6	3	200000 Ft/m ³	12.300.000 Ft
Beams construction							
Instalation of CLT beams	7 m ³	1,00 h/m ³	7 h	6	1	200000 Ft/m ³	1.400.000 Ft
Vertical load bearing structures 1st floor			411 h		19		7.870.000 Ft
RC walls	54 m ³	6,78 h/m ³	366 h	3	16	9000 Ft/m ²	1.620.000 Ft

Pillars							
instalation of CLT Pilars	17 m ³	1,00 h/m ³	17 h	3	1	200000 Ft/m ³	3.450.000 Ft
instalation of CLT walls	14 m ³	2,00 h/m ³	28 h	3	2	200000 Ft/m ³	2.800.000 Ft
Horizontal load-bearing structures 1st floor					8		1.400.000 Ft
Beams construction							
Instalation of CLT beams	7 m ²	1,00 h/m ³	7 h	3	1	200000 Ft/m ³	1.400.000 Ft
Slab construction							
Instalation of CLT slabs	82 m ³	2,00 h/m ³	163 h	3	7	200000 Ft/m ³	16.320.000 Ft
Flat Roof					18		4.321.000 Ft
Installation of anti-vapour insulation	286 m ²	0,12 h/m ²	34 h	3	2	2000 Ft/m ²	572.000 Ft
Thermal insulation	286 m ²	0,46 h/m ²	132 h	3	6	2800 Ft/m ²	800.800 Ft
Drainage sheet	286 m ²	0,08 h/m ²	23 h	3	1	2900 Ft/m ²	829.400 Ft
Installation of gutter	25 m	0,20 h/m ²	5 h	3	1	8500 Ft/m ²	212.500 Ft
Downpipe installation	9 m	0,20 h/m	2 h	3	1	9500 Ft/m ²	85.500 Ft
Drainage gully	32 m	0,86 h/m	28 h	3	2	14000 Ft/m ²	448.000 Ft
Concrete slope from thermal insulation	286 m ²	0,58 h/m ²	2 h	3	1	2800 Ft/m ²	800.800 Ft
Waterproofing	286 m ²	0,28 h/m ²	80 h	3	4	2000 Ft/m ²	572.000 Ft
Roof tiling	286 m ²	1,20 h/m ²	343 h	4	11	8000 Ft/m ²	2.288.000 Ft
Facade					54		185.330.400 Ft
Scaffolding	585 m ²	0,21 h/m ²	123 h	4	4	45 Ft/m ²	105.300 Ft
Wall painting	50 m ²	0,17 h/m ²	9 h	2	1	3600 Ft/m ²	180.000 Ft
Gable, windowsill, sheet metal covering	93 m	0,47 h/m	44 h	2	3	10700 Ft/m ²	995.100 Ft
Installation of curtain walls	743 m ²	1,30 h/m ²	966 h	6	21	205000 Ft/m ²	152.315.000 Ft
Thermal insulation	585 m ²	0,45 h/m ²	263 h	3	11	11000 Ft/m ²	6.435.000 Ft
Exterior cladding	200 m ²	1,20 h/m ²	240 h	3	10	50000 Ft/m ²	10.000.000 Ft
External doors and windows	17 db	1,0 h/db	17 h	2	2	100000 Ft/db	1.700.000 Ft
Shadow system	170 m ²	2,4 h/db	24 h	2	2	80000 Ft/m ²	13.600.000 Ft
Interior finishing work			1821 h		67		21.429.591 Ft
Construction of Floating floor	354 m ²	1,60 h/m ²	231 h	6	5	5000 Ft/m ²	1.770.000 Ft
construction of partition walls	131 m ²	1,10 h/m ²	144 h	6	4	8500 Ft/m ²	1.113.500 Ft
Internal plastering	740 m ²	0,10 h/m ²	74 h	6	2	2500 Ft/m ²	1.850.925 Ft
Wall painting	740 m ²	0,22 h/m ²	163 h	6	4	1800 Ft/m ²	1.332.666 Ft
Making water-repellent painting	175 m ²	0,11 h/m ²	19 h	4	1	2000 Ft/m ²	349.400 Ft
Dry screed construction	720 m ²	0,50 h/m ²	360 h	4	12	7000 Ft/m ²	5.040.000 Ft
Flooring	720 m ²	0,30 h/m ²	216 h	5	5	7000 Ft/m ²	5.040.000 Ft
Placing wall tiles	138 m ²	1,53 h/m ²	211 h	5	6	6000 Ft/m ²	827.100 Ft
Ceilling redenring	100 m ²	0,30 h/m ²	30 h	2	2	2500 Ft/m ²	250.000 Ft
External facade decoration	10 m ²	3,00 h/m ²	30 h	2	2	30000 Ft/m ²	300.000 Ft

Suspended ceiling	100 m ²	1,28 h/m ²	128 h	2	8	16000 Ft/m ²	1.600.000 Ft
Metal works	14 db	0,4 h/db	6 h	2	1	4000 Ft/db	56.000 Ft
Decoration and tapestry	10 m ²	2,40 h/m ²	24 h	2	2	6000 Ft/m ²	60.000 Ft
Painting on pipes	48 m	3,45 h/m	166 h	2	11	5000 Ft/m ²	240.000 Ft
Interior doors and windows	20 db	1,0 h/db	20 h	2	2	80000 Ft/db	1.600.000 Ft
Mechanical works			156 h		23		13.730.000 Ft
Domestic hot water installation	3 db	3,8 h/db	11 h	3	1		
Heating system installation	20 db	1,8 h/db	35 h	3	2	80000 Ft/db	1.600.000 Ft
Photovoltaic panels installation	109 db	1,0 h/db	109 h	6	3	70000 Ft/db	7.630.000 Ft
Placement of mechanical equipment					3		
Electrical Wiring					4		
Electrical installation					6		
Placement of sanitary ware	10 db				4	450000 Ft/db	4.500.000 Ft
Cleaning and final works			2 h		3		300.000 Ft
Waste disposal					2		
Pavement + sand + concrete + gravel	20 m ²	0,12 h/m ²	2 h	4	1	15000 Ft/m ²	300000
Handover, final cleaning, repairs					3		
TOTAL					302 n		339.054.646 Ft

Legend		Utilities	
	Fence		Electricity
	Container		Water supply
	Material storage		Communication



GENERAL ORGANIZATION PLAN
SCALE 1/500

DIPLOMA DESIGN

Urban Design Department

PROJECT:
THE GREEN HOUSE

PROJECT:
GENERAL ORGANIZATION PLAN

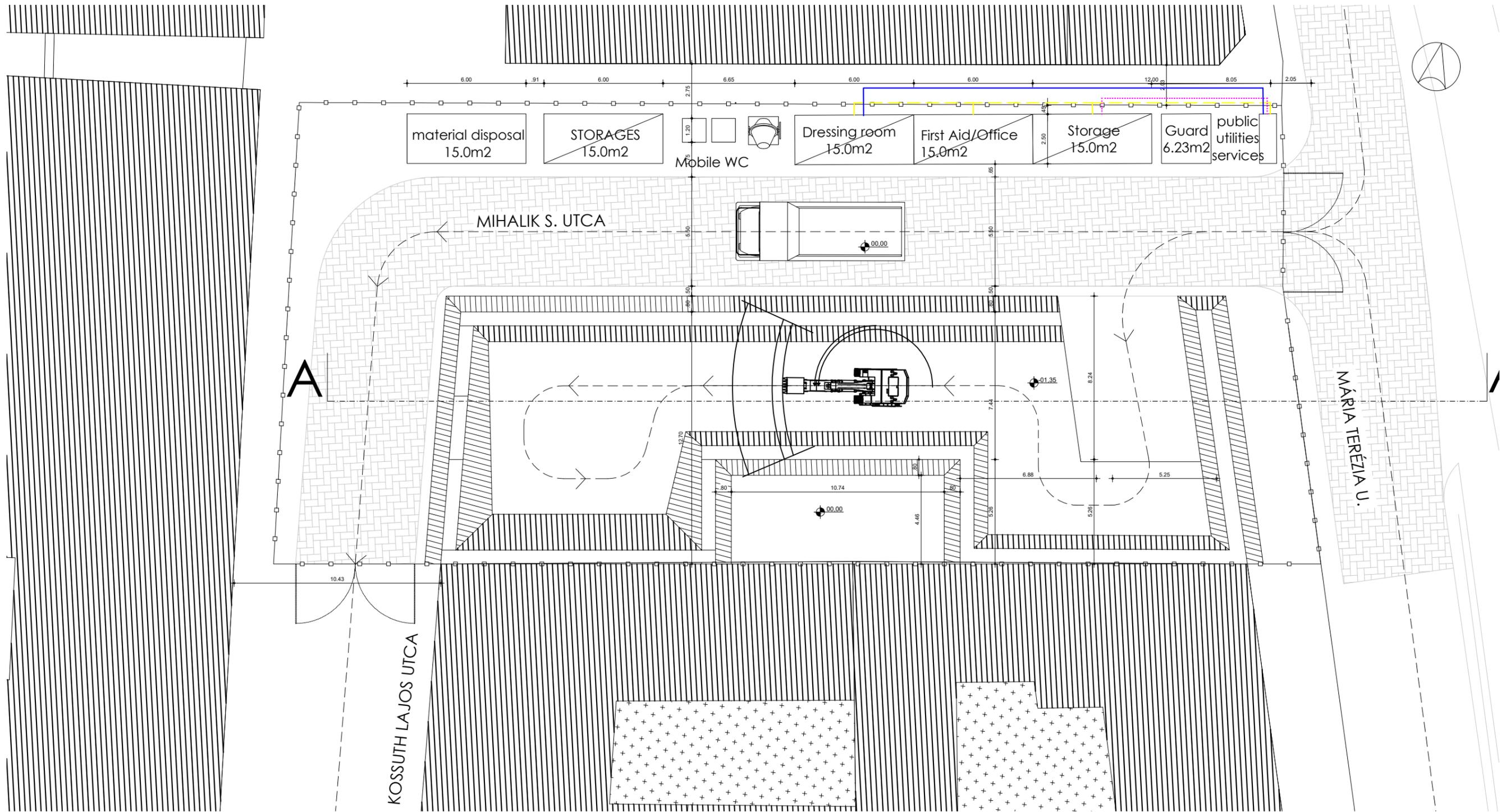
STUDENT/ NEPTUN CODE:
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CONSULTANT:
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HUNYADI Z.
TAMÁS THER
ZOLTÁN MAGYAR
ADRIENN LEPEL

DATE:
20/05/2020

Scale:
1/500

01



EXCAVATION PLAN
SCALE 1/200

DIPLOMA DESIGN

Urban Design Department

PROJECT:
THE GREEN HOUSE

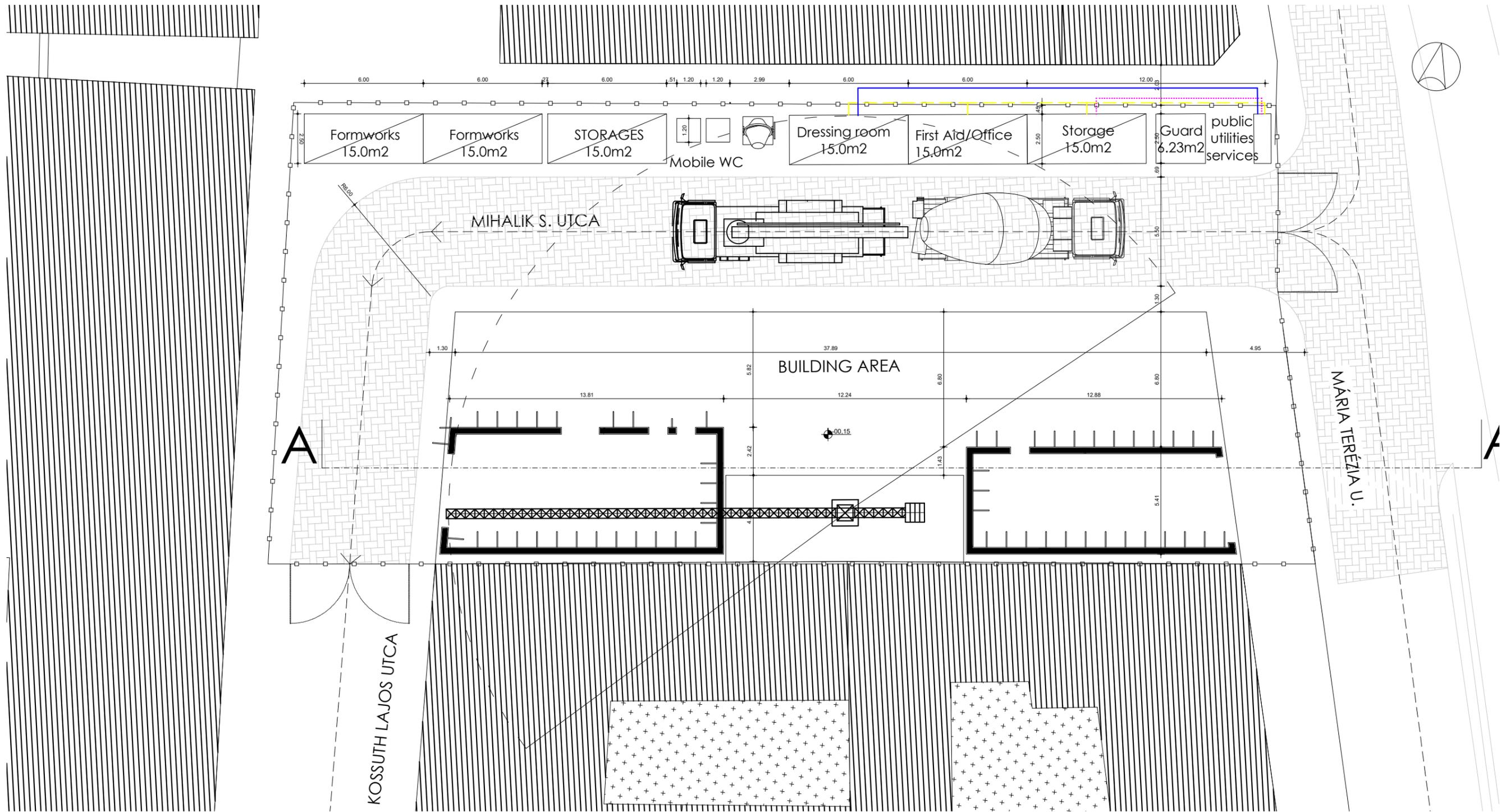
PROJECT:
EXCAVATION PLAN

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Scale:
1/200



FORMWORKS R.C. WALLS PLAN
SCALE 1/200

DIPLOMA DESIGN

Urban Design Department

PROJECT:
THE GREEN HOUSE

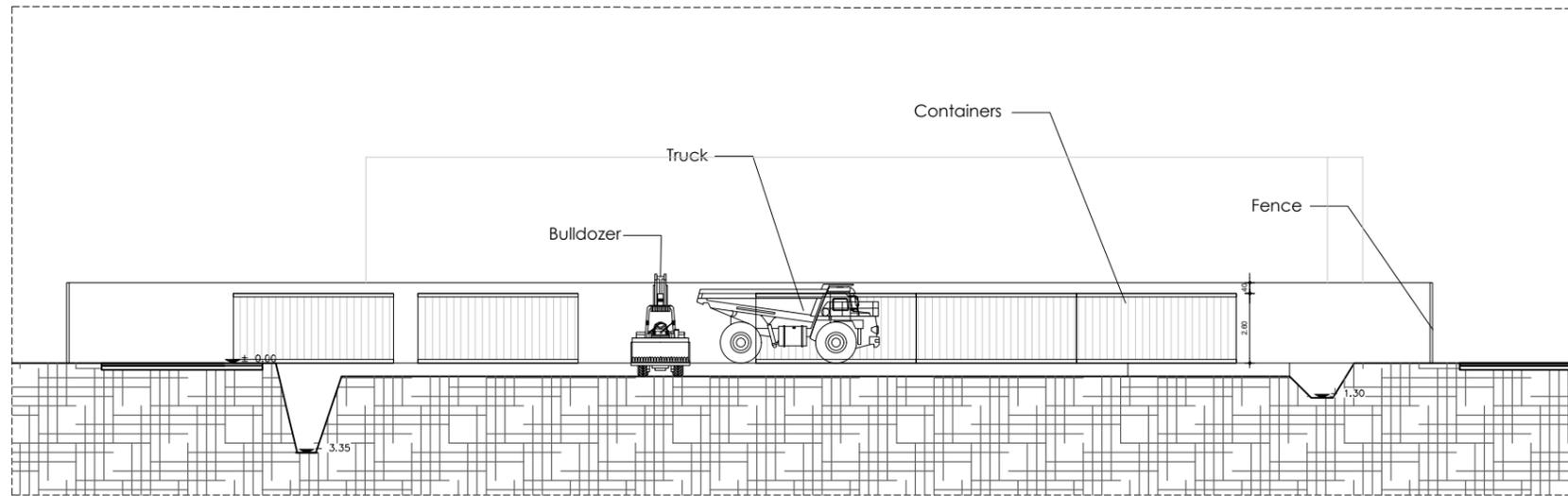
PROJECT:
FORMWORKS R.C. WALLS PLAN

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BÁRBARA DELGADO - RJHH1T

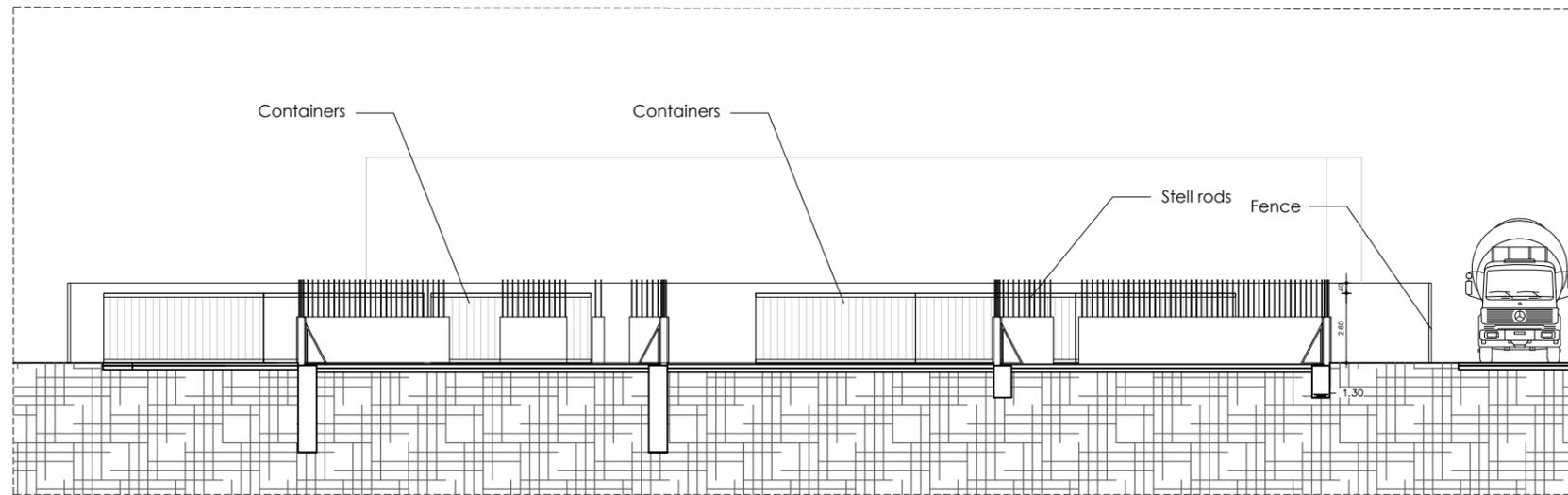
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Scale:
1/200



SECTION EXCAVATION PLAN
SCALE 1/250



SECTION FORMWORKS R.C. WALLS PLAN
SCALE 1/250

DIPLOMA DESIGN

Urban Design Department

PROJECT:
THE GREEN HOUSE

PROJECT:
SECTIONS

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DATE:
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Scale:
1/250